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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER

CHANG, JON CARLTON

ART UNIT	PAPER NUMBER
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2623

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/479,886

Applicant(s)

KAKIUCHI ET AL.

Examiner

Jon Chang

Art Unit

2623

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 11 June 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-19 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-19 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ | 6) <input type="checkbox"/> Other: _____ |

Response to Applicants' Amendment and Arguments

1. The amendment filed June 11, 2003, has been entered and made of record.

The Examiner notes that the clean copy of claim 14 (which is the copy of the claim actually entered) does not correspond to the marked-up version of the claim. Specifically, the clean copy does not include the limitation "at a plurality of magnifications," as indicated as being added in the marked-up version. The clean copy of the claim 14, as it is written, is what is examined in this Office Action.

In response to the amendment, the rejection under 35 U.S.C. § 112, second paragraph, is withdrawn.

Applicants' arguments have been fully considered, but they are not deemed to be persuasive for at least the following reasons. Applicants argue (pages 6 and 7) that neither Matsugu nor Fu disclose the use of multiple magnification data as recited in the claims. Specifically, Applicants state that Matsugu compensates for different magnifications by scaling input patterns to a plurality of scaling factors (as opposed to multiple magnification reference arrangement data). Applicants also allege that Fu discloses comparing the input data to a single reference data, where the input data is rescaled in size. The Examiner notes that Matsugu does teach a scaling parameter, and specifically teaches that the model array data (i.e., the reference data) is reduced or enlarged in dependence upon the scaling parameter (column 7, lines 46-48). Therefore, Matsugu discloses multiple magnification data as claimed. Likewise, Fu discloses multiple magnification reference data (column 7, lines 47-56).

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claims 1-2, 7 and 14-16 are rejected under 35 U.S.C. 102(e) as being anticipated by U.S. Patent 6,463,176 to Matsugu et al. (hereinafter "Matsugu").

As to claim 1, Matsugu discloses an image recognition device, comprising:

an element matching means to match a plurality of input pattern elements obtained by dividing an input image into a plurality of regions with the corresponding target pattern elements of a target pattern (column 5, lines 22-30; Fig.1A, element A5; column 6, lines 50-57, the elements are mapped to a lattice space which is partitioned, i.e., divided); and

a pattern detection means to detect relative positions of said plurality of input pattern elements compared with a multiple magnification reference arrangement data (column 7, lines 46-48) of said target pattern elements in order to recognize whether said input image includes said target pattern (column 7, lines 49-54; Fig.1A).

As to claim 2, Matsugu discloses an image recognition device, comprising:

a dictionary generating unit which stores dictionary data for each pattern element in a target pattern (column 5, lines 28-30; Fig.1A, element A4);

an element matching unit, which compares and matches input image pattern data which is provided as input against said dictionary data stored in said dictionary generating unit (column 5, lines 27-28; Fig.1A, element A5);

an arrangement data generating unit which stores the position data representing the arrangement of the target pattern elements at a plurality of magnifications (column 7, lines 46-51); and

a pattern detection unit, which based on the output of said element matching unit and said position data from said arrangement data generating unit, determines whether said target pattern can be found in said input image pattern data (column 7, line 52 to column 8, line 9).

As to claim 7, Matsugu discloses an image processing device, comprising:

an element matching means to match a plurality of input pattern elements obtained by dividing an input image into a plurality of regions with the corresponding target pattern elements of a target pattern (column 5, lines 22-30; Fig.1A, element A5; the elements are mapped to a lattice space which is partitioned, column 6, lines 50-57);

a pattern detection means to detect relative positions of said plurality of input pattern elements compared with a reference arrangement data, at multiple magnifications (column 7, lines 46-48) of said target pattern elements in order to recognize whether said input image includes said target pattern (column 7, line 52 to column 8, line 9) ;and

a control means to control output of said input image to an output device when said pattern detection means recognizes said input image includes said target pattern (column 4, lines 62-63).

As to claim 14, Matsugu discloses a method of processing an image, said method comprising:

inputting a reference image (column 5, lines 28-29);

determining target pattern elements for said reference image by dividing said reference image into a plurality of regions (column 6, lines 50-57);

determining arrangement data for said target pattern elements (column 7, lines 49-50);

inputting data for an input image (Fig.1B, block S11);

determining input elements for said input image by dividing said input image into said plurality of regions corresponding to said reference image (Fig.1B, blocks S12 and S13; column 6, lines 50-57); and

comparing said target pattern elements and said input elements (Fig.1B, block S15).

As to claim 15, Matsugu discloses the method of claim 14, wherein said comparing comprises comparing said target pattern elements and said input elements relative position to each other using said arrangement data (column 7, lines 49-54).

As to claim 16, Matsugu discloses the method of claim 14 further comprising halting the process if said target pattern elements include said input elements based on said comparing (Fig.1B, "END").

4. Claims 1-16 are rejected under 35 U.S.C. 102(e) as being anticipated by U.S. Patent 6,370,271 to Fu et al. (hereinafter "Fu").

As to claim 1, Fu discloses an image recognition device, comprising:

an element matching means to match a plurality of input pattern elements obtained by dividing an input image into a plurality of regions with the corresponding target pattern elements of a target pattern (column 2, line 65 to column 3, line 1; column 3, lines 7-11; Figures 1A-1E; Fig.6, elements 603, 604, 605); and

a pattern detection means to detect relative positions of said plurality of input pattern elements compared with a multiple magnification reference arrangement data (column 7, lines 47-56) of said target pattern elements in order to recognize whether said input image includes said target pattern (column 3, lines 4-5; Figs.1A-1E; Fig.6, elements 608, 609).

As to claim 2, Fu discloses an image recognition device, comprising:

a dictionary generating unit which stores dictionary data for each pattern element in a target pattern (column 4, line 63);

an element matching unit, which compares and matches input image pattern data which is provided as input against said dictionary data stored in said dictionary generating unit (column 2, line 65 to column 3, line 1; column 3, lines 7-11; Figures 1A-1E; Fig.6, elements 603, 604, 605);

an arrangement data generating unit which stores the position data representing the arrangement of the target pattern elements (column 3, lines 4-5); and

a pattern detection unit, which based on the output of said element matching unit and said position data from said arrangement data generating unit, determines whether said target pattern can be found in said input image pattern data (column 3, lines 4-5; Figures 1A-1E; Fig.6, elements 608, 609).

Regarding claims 3-6, Fu further discloses that the dictionary generating unit, the element matching unit, the arrangement data generating unit, and the pattern detection unit comprising software routines (column 5, lines 22-24).

As to claim 7, Fu discloses an image processing device, comprising:

an element matching means to match a plurality of input pattern elements obtained by dividing an input image into a plurality of regions with the corresponding target pattern elements of a target pattern (column 2, line 65 to column 3, line 1; column 3, lines 7-11; Figures 1A-1E; Fig.6, elements 603, 604, 605);

a pattern detection means to detect relative positions of said plurality of input pattern elements compared with a reference arrangement data at multiple magnifications of said target pattern elements in order to recognize whether said input image includes said target pattern (column 3, lines 4-5; Figures 1A-1E; Fig.6, elements 608, 609) ; and

a control means to control output of said input image to an output device when said pattern detection means recognizes said input image includes said target pattern (Figs 1A-1E; note the printer).

With regard to claim 8, Fu further discloses that the output device comprises a printer (Figs. 1A-1E).

Fu further discloses the scanner, digital camera or floppy disk for inputting the input image, as required by claims 9-11 (Figs.1A-1E; column 5, lines 4-5 and 11-12).

With regard to claim 12, Fu further discloses a personal computer to facilitate copying of said input image (Fig.1C).

Claim 13 is drawn to a recording medium containing computer code for implementing an image recognition method which corresponds to the device of claim 1. Fu discloses this at column 5, line 4-10.

As to claim 14, Fu discloses a method of processing an image, said method comprising:

- inputting a reference image (column 3, lines 4-12);

- determining target pattern elements for said reference image by dividing said reference image into a plurality of regions (column 3, lines 37-41);

- determining arrangement data for said target pattern elements (column 3, lines 4-15);

- inputting data for an input image (Fig.6, input to element 601);

- determining input elements for said input image by dividing said input image into said plurality of regions corresponding to said reference image (column 3, lines 9-10); and

- comparing said target pattern elements and said input elements (column 3, lines 12-15).

As to claim 15, Fu discloses the method of claim 14, wherein said comparing comprises comparing said target pattern elements and said input elements relative

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position to each other using said arrangement data (the templates, column 3, lines 40-41).

As to claim 16, Fu discloses the method of claim 14 further comprising halting if said target pattern elements include said input elements based on said comparing (column 6, lines 48-51).

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

7. Claims 3-6 and 8-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Matsugu.

Regarding claims 3-6, Matsugu is silent with regard to the dictionary generating unit, the element matching unit, the arrangement data generating unit, and the pattern detection unit comprising software routines. However, the Examiner takes Official Notice that utilizing software routines to implement functions are well known in the art. Given the widespread use of computers and software in the art, and the flexibility offered by software implementation, it would have been obvious to one of ordinary skill in the art to utilize software routines to implement the various units in Matsugu's device. Further, the fact that Matsugu's device is CPU based (see fig.1A) would have provided further motivation for making the modification.

With regard to claim 8, Matsugu does not disclose that the output device comprises a printer. However, the Examiner takes Official Notice that printers as output devices are well known in the art. It would have been obvious to one ordinary skill in the art to utilize an output device which met his or her needs. This would include any known output device such as a printer.

Matsugu does not disclose the scanner, digital camera or floppy disk for inputting the input image, as required by claims 9-11. However, the Examiner takes Official Notice that each of these are exceedingly well known for inputting images. It would have been obvious to one of ordinary skill in the art to utilize a device which would meet his or her needs for a given application. This would include any of a scanner, digital camera or floppy disk.

With regard to claim 12, Matsugu does not disclose a personal computer to facilitate copying of said input image. However, the Examiner takes Official Notice that

personal computers are well known, and are well known for facilitating copying of images. It would have been obvious to one of ordinary skill in the art to utilize a computer, given the widespread use of computers in the field. Further since, Matsugu's device is a reproduction apparatus, it would also have been obvious to utilize it to copy the input image.

Claim 13 is drawn to a recording medium containing computer code for implementing an image recognition method which corresponds to the device of claim 1. While Matsugu does not disclose use of a computer, and therefore does not disclose the claimed recording medium, the Examiner takes Official Notice that utilizing computers and associated recording media containing computer code for implementing methods is well known in the art. Given the widespread use of computers and software in the art, and the flexibility offered by software implementation, it would have been obvious to one of ordinary skill in the art to utilize them to implement Matsugu's device.

8. Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over Fu.

As to claim 18, Fu does not disclose reducing the resolution of a reproduction of said input image if said target pattern elements include said input elements based on said comparing. The Examiner takes Official Notice that reducing the resolution of a reproduction is well known in the art. It would have been obvious to one of ordinary skill in the art to implement this technique in Fu because it would allow a person to easily distinguish a reproduction from an original.

9. Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Fu and U.S. Patent 5,583,614 to Hasuo et al. (hereinafter "Hasuo").

As to claim 17, Fu does not disclose changing the color of a reproduction of said input image if said target pattern elements include said input elements based on said comparing. However, Hasuo teaches outputting an image in a different color if it is determined that an input image is money (i.e., should not be copied) based on a comparison (Fig.6). It would have been obvious to employ Hasuo's technique in Fu's method because this would allow a person to easily see that a printed document is a copy, and not an original. This would be important for documents which should not be copied exactly, such as money, for example.

10. Claims 19 is rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Fu and U.S. Patent 5,257,119 to Funada et al. (hereinafter "Funada").

As to claim 19, Fu does not disclose superimposing an alphanumeric character on top of a reproduction of said input image if said target pattern elements include said input elements based on said comparing. However, Funada teaches superimposing alphanumeric characters on top of a reproduction of an input image when it is determined that the input image is confidential based on the presence of certain information in the image (e.g., Fig.10; column 8, line 46 to column 9, line 11). It would have been obvious to employ Funada's technique in Fu's method because this would allow a person to easily see that a printed document is a copy, and not an original. This

would be important for documents which should not be copied, such as confidential documents, for example.

Conclusion

11. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.


Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jon Chang whose telephone number is (703)305-8439. The examiner can normally be reached on M-F 8:00 a.m.-6:00 p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Amelia Au can be reached on (703)308-6604. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703)305-4700.


Jon Chang
Primary Examiner
Art Unit 2623

Jon Chang
August 14, 2003